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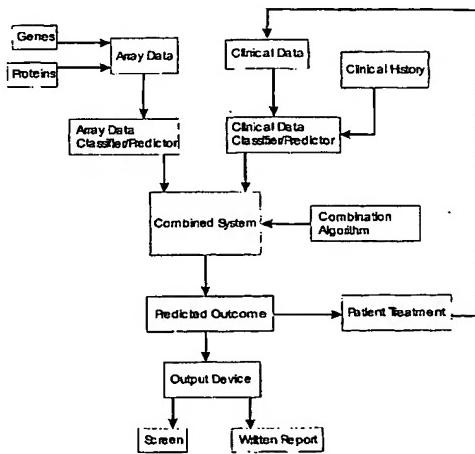
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**(54) Title: MEDICAL DECISION SUPPORT SYSTEMS UTILIZING GENE EXPRESSION AND CLINICAL INFORMATION AND METHOD FOR USE**



(57) **Abstract:** Embodiments of this invention provide improved medical decision support systems and methods for using such systems to simultaneously consider two or more different types of information along with estimates of accuracies of the information to produce a combined predictor. Such predictors have greater accuracy compared to use of the individual types of information alone. Increased accuracy can increase the likelihood of correct diagnosis and/or evaluation of clinical condition or outcome, and can decrease the frequency of false negative results, including misdiagnosis. Embodiments of medical decision support systems can include EFuNN, Bayesian or other statistical estimators to produce a combined predictor. The systems can be used to extract relationship rules between sets of genes and clinical variables common for patients of a group, thus making a personalized gene-based treatment possible. Such systems are incorporated into computer-based devices and are run using suitable computer programs. Outputs can be directed to hard-copy devices for printing, or can be transmitted remotely to a terminal at a location where a practitioner is interacting with a patient.



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